

**Collider –Accelerator Department Machine Advisory Committee
31 October – 2 November 2016 Meeting (C-AD MAC-13)**

Charge

Further RHIC upgrades and all eRHIC versions under consideration require the use of a number of superconducting radio frequency (SRF) components, and the use of polarized and unpolarized DC photo electron guns.

In RHIC a beam driven 56 MHz SRF cavity has reached 1 MV without dedicated HOM dampers. However, this voltage is still a factor of 2 below the design value. For the Low-Energy RHIC electron Cooler (LEReC) a 2.6 MV 704 MHz SRF cavity will accelerate the electron beam used for the cooling. LEReC will also use a Cornell-built high intensity DC photo electron gun.

The Coherent electron Cooling (CeC) Proof-of-Principle (PoP) test in RHIC completed installation of a 112 MHz SRF photo electron gun and a 704 MHz 20 MeV SRF acceleration cavity. During commissioning of the CeC electron accelerator an energy of 10 MeV has been reached so far.

Both of the linac-ring (LR) and ring-ring (RR) versions of the eRHIC design use a DC photo electron gun to produce the polarized electron beam, although with different parameters. And, in eRHIC, SRF is used for the acceleration and storage of the electron beam, and crabbing of the hadron beam.

We ask that you address the following charge questions:

- a) Are the technology and parameters of the SRF development at C-AD optimum for the present RHIC upgrades and for the LR and RR eRHIC designs?
- b) Are the organization and infrastructure of the SRF work at C-AD appropriate to carry out the R&D program?
- c) Are the technical aspects of the current SRF and DC photo-electron-gun efforts adequate to reach the LEReC and CeC project requirements and the eRHIC design goals?

It is requested that a concise report responsive to this charge be forwarded to the C-AD Chair, Thomas Roser, by 25 November 2015.